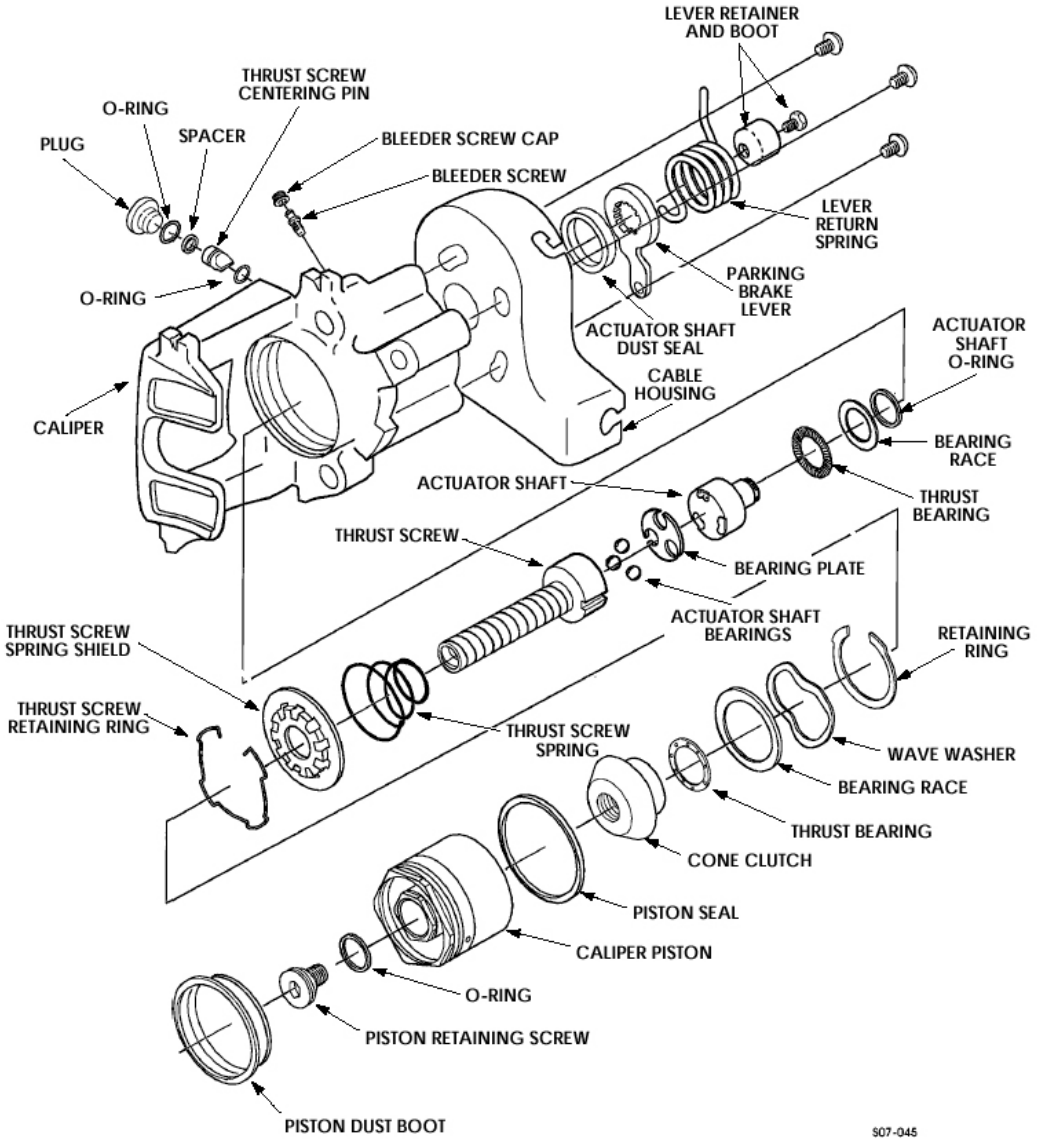
Rebuilding Rear Calipers
By Gilbert Herman
September 27, 2005

I have done this job successfully several times. By successful, I mean that the brake works, the parking brake works and importantly I do not have leaks. The AMG procedure does generally describe the rebuild process but it does not discuss exactly how to do it, have pictures or discuss some tricks to make it easier, so I will. You can ONLY REPLACE SEALS; no other parts are sold for rebuilding the caliper. **The AMG seal kit part number is 5744403**

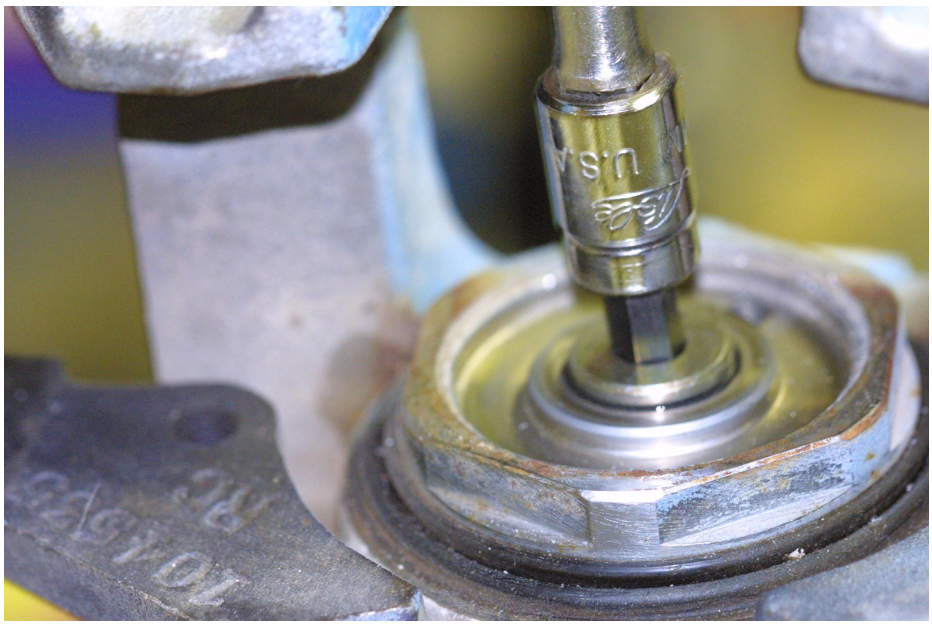


1. Remove the spring from the parking lever by holding the caliper in a vise then using Vise grips to bend it back and over the lever.

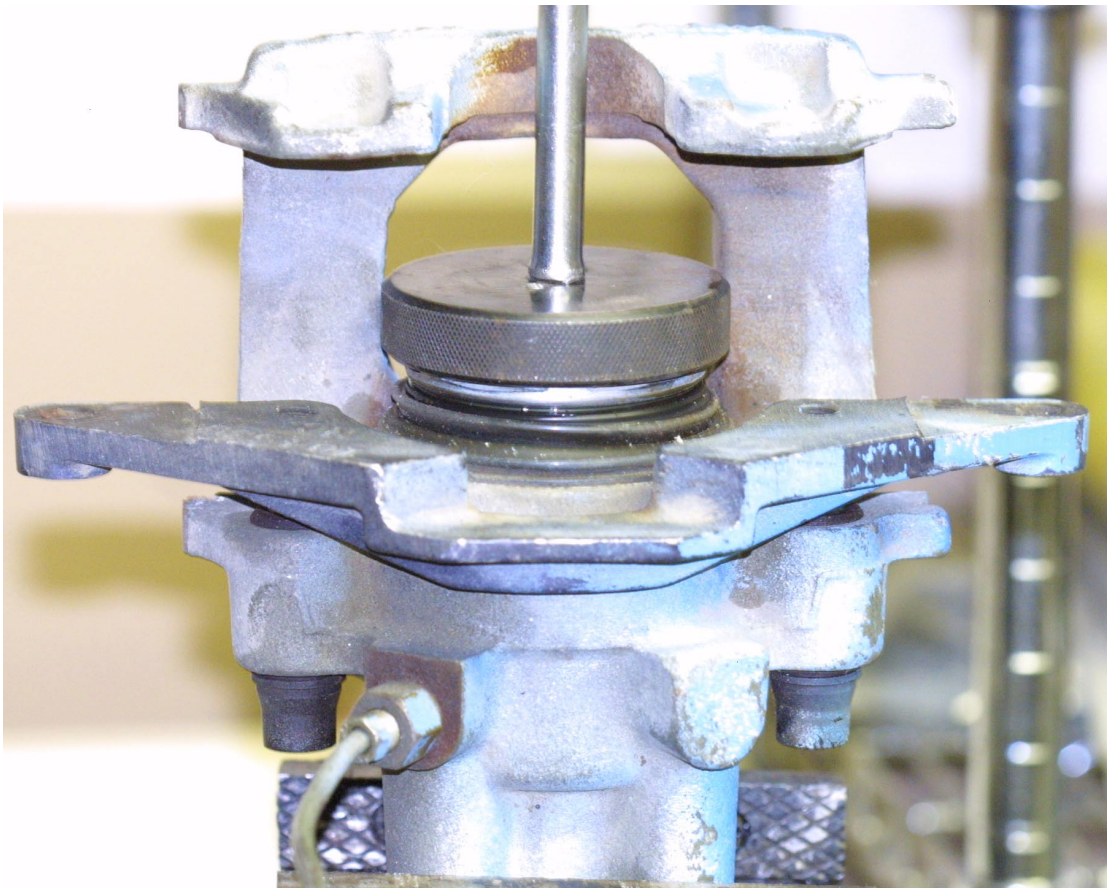
2. Remove the bolt, cup shaped retainer and lever.

3. Remove the metal protective cap that covers the piston retaining screw. To do this, gently tap the metal lip of the cap away from the piston perimeter with a screwdriver and hammer. You must bend it back nearly 360 degrees before it falls out of the piston center. This now exposes the centrally located screw.

4. Remove the piston retaining screw with a hex socket. This screw has a rubber O-ring seal and a beveled shaped.



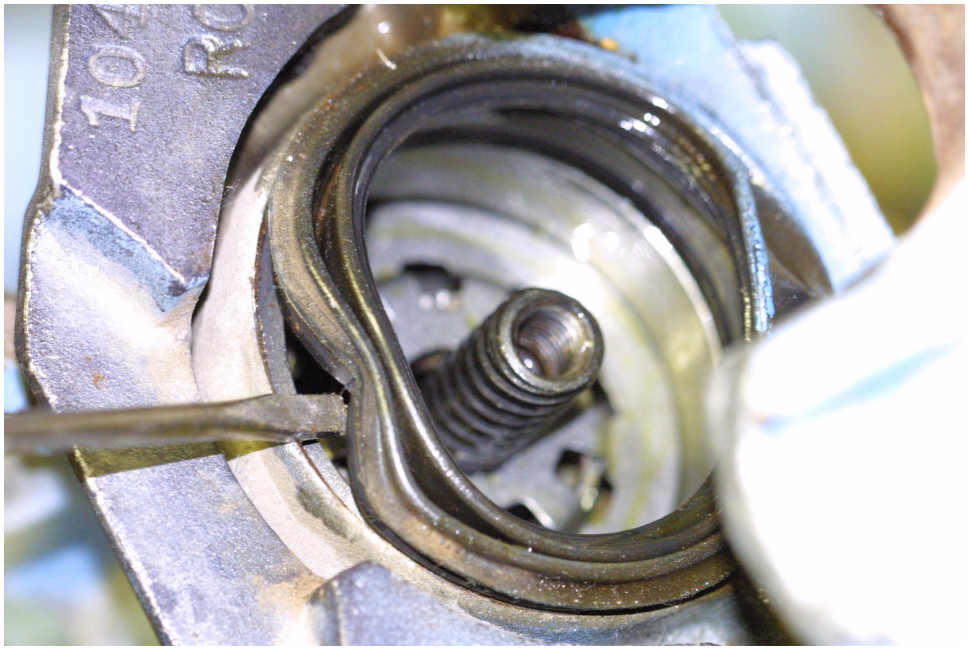
5. To remove the piston, I used the Breggin tool with a 3/8 extension and ratchet. http://www.bluehummer.com/rebrcacoto.html You then turn the piston counterclockwise. This can remove the piston about 2/3 of the total distance quickly. Then, you must remove this tool and use large channel locks on the same flat surface to totally unscrew the piston. Protect the surface from scratching.



The Breggin tool fits on top of the piston that has a hexagonal surface prior to the actual smooth surface of the piston cylinder itself. You should carefully wrap or protect the piston surface to prevent any scratches that can lead to fluid leaks later.

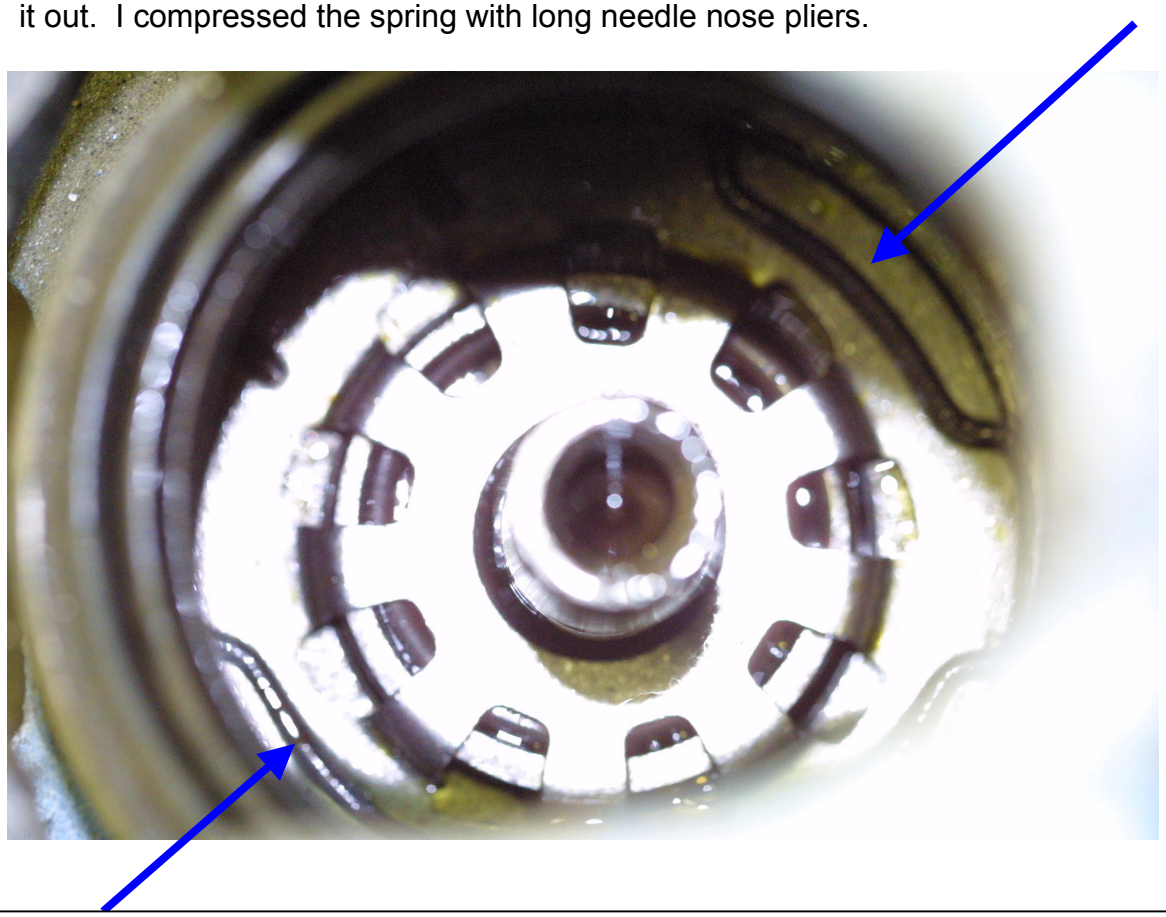
6. Once the piston has been freed from its seat on the thrust screw, pull it out of the dust boot.

7. Remove the dust boot with a pry bar. Discard.



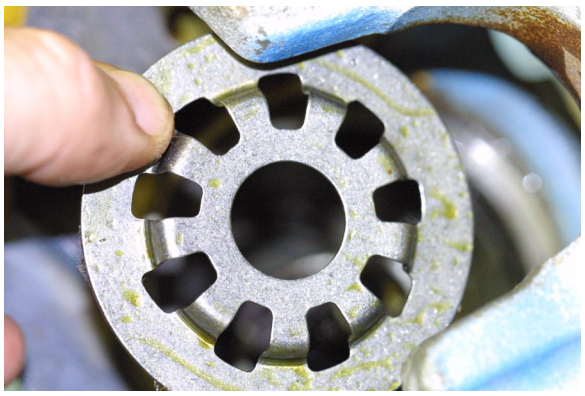
8. To remove the thrust screw-retaining ring (spring), it is easiest if you have the correct tools. I would recommend using the **SK HAND TOOLS - HOOK & PICK SET, 90353.** Either be very careful to not touch the inner piston cylinder surface or wrap the tools with a thin layer of electrical

tape. Compress the spring, then place the SK hooks under it so as to lift it out. I compressed the spring with long needle nose pliers.

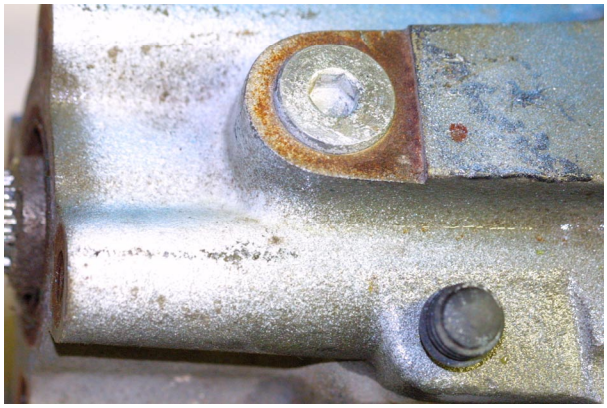


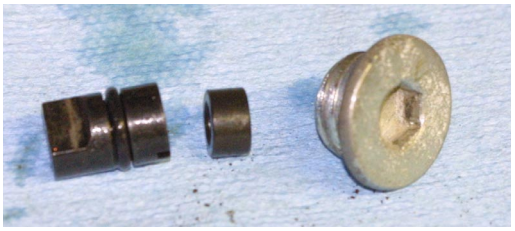
With long needle nose pliers, compress here, then place the SK hooks under the spring.

9. Once the spring is removed, the thrust screw spring shield should come out by using a hook to pull it up (a spring on its undersurface should almost shoot it out. BUT, IF IT DOES NOT EASILY COME OUT; gently hit the thrust screw laterally toward the THRUST SCREW CENTERING PIN side with a plastic hammer to dislodge the entire mechanism.

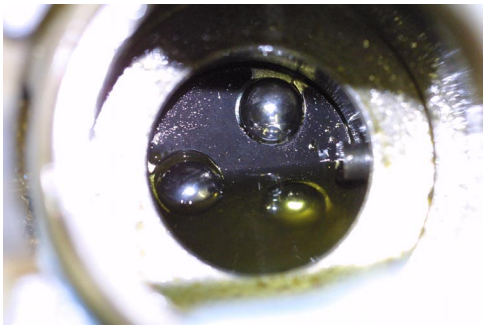


10. With the thrust screw removed, remove the thrust screw centering pin plug, spaced and finally with your finger inside the piston cylinder push the centering pin out. Discard O-ring.





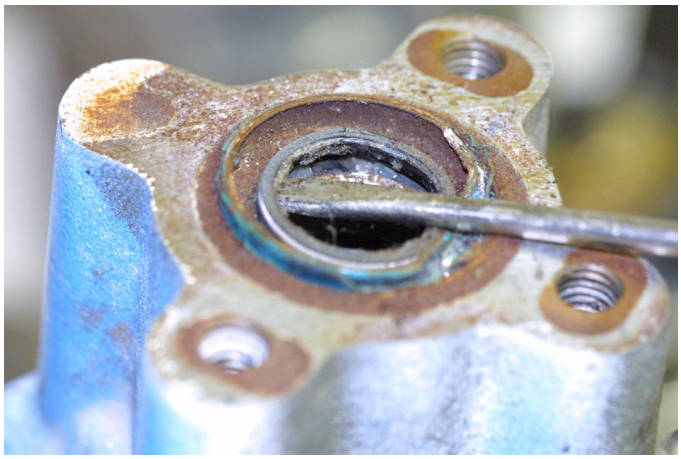
11. Remove the actuator shaft bearing balls with a magnet. Remove the plastic bearing plate.



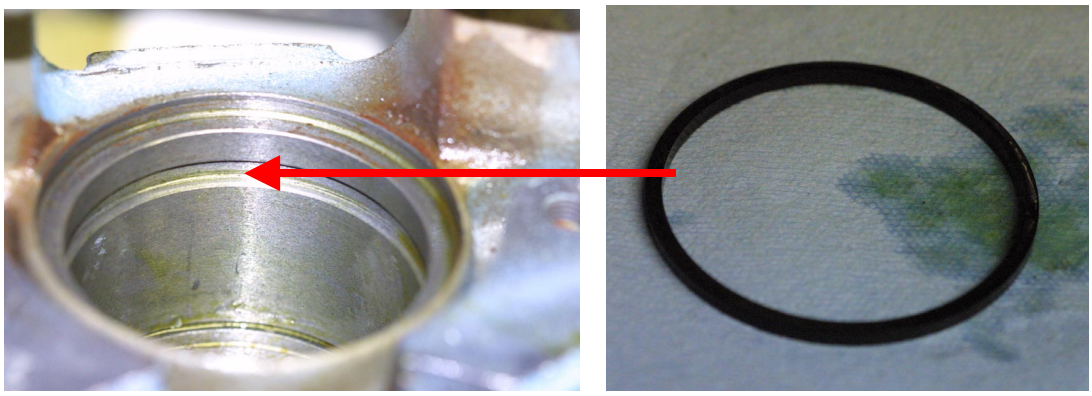
12. With the parking brake lever removed, remove the actuator shaft by pressing it out from the actuator shaft dust seal or if necessary gently hammer it out with a plastic mallet. It may be rusted to this metallic seal. On the actuator shaft will be the thrust bearing, bearing race and actuator O-ring (discard O-ring).

The trust screw and the actuator shaft have between them three steel balls. These balls fit into eccentric indents. This will provide a one-way movement to the thrust screw when under compression. This is why when changing brake pads you must both compress and rotate the piston to retract it.

13. Pry off the actuator shaft dust seal and discard.



14. Remove the caliper piston seal with a SK hook and discard.



15. In my opinion, there is no purpose in disassembling the caliper piston since in my modification of the reassembly procedure we will reassemble the mechanism without the aid of the piston being used to push the thrust plate and thrust plate ring into position (the AMG recommended procedure)

REASSEMBLY

1. Install new actuator shaft dust seal. Seat it with a 1-inch socket. Lubricate with brake caliper grease

2. Lubricate the actuator shaft, bearing, race and plate. Install onto shaft, secure with new actuator shaft O-ring.

3. Install actuator shaft mechanism into caliper. Tap down with a non-metallic tool (plastic hammer handle) to assure it is properly seated.

4. Install plastic bearing plate. Apply caliper grease to the three bearing balls and drop into place, between the notch of the plate and into the deep portion of the actuator ball notch.

5. Install new O-ring on the thrust screw-centering pin, install pin into the caliper by placing it inside the cylinder and pushing it through with you finger with a finger of you other hand preventing you from pushing it totally through. Then with a screwdriver rotate the pin so the notch is straight up and down to align with the thrust screw groove.

6. Lubricate the thrust screw; install the spring (wide portion facing the plate) then the retaining plate on the shaft.

7. Install the thrust screw by aligning the slot with the centering pin. Lower the shaft with its spring and plate onto the three ball bearings.

8. Compress the retaining ring (spring) with long nose needle pliers, and then carefully lower into cylinder on top of the retaining plate.

9. You must now compress this plate and the underlying thrust spring so as to seat the ring into the groove.
    a. First, using the parking brake lever, rotate the actuator shaft and the overlying thrust screw to find the lowest level of the entire mechanism. You can feel the entire mechanism rise and fall as to move the parking brake lever right and left.
    b. Once the lowest point is found, place a firm piece of PVC tubing over the thrust screw, then compress it with a large C-clamp. Compress until you can see the entire groove for the retaining ring (spring).
    c. Once again, compress the retaining ring with long needle nose pliers and lower it and seat it into the groove. Using non-metallic tools or plastic tape wrapped tools push this ring 360 degrees into the groove
    d. Remove the C-clamp and PVC.
    e. Note: AMG recommends installing this ring and compressing using the piston with the clutch cone removed. AMG uses the piston to push down the mechanism until the groove is exposed and ring automatically snaps in place. I found that this procedure rarely resulted in 360-degree ring seating into the groove, hence, my modification.

10. Install new O-ring on centering pin plug. Insert the spacer and screw in the plug with an Allen socket.

11. Install a new caliper piston seal into the caliper groove. Lubricate.

12. Disassemble the piston by compressing the retainer ring. Remove the bearing, lubricate and reassemble.

13. Lubricate the piston with grease. Place piston onto thruster shaft. Using hand pressure, push down and turn until the screw seats itself into the clutch cone threads.

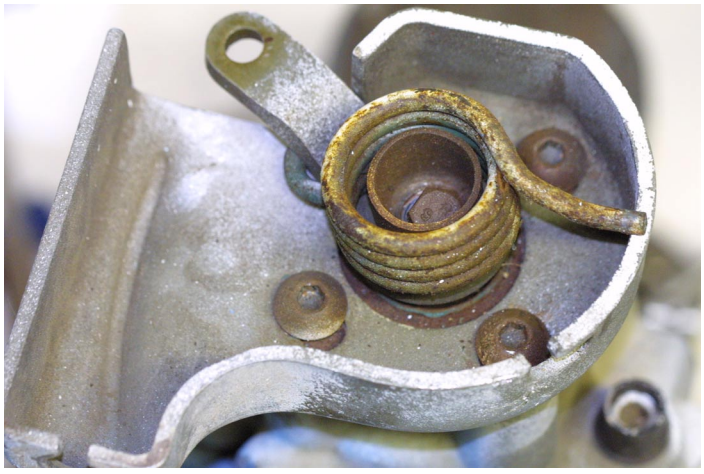
14. Using Channel locks on the hexagonal surface of the piston push downward and clockwise rotate to retract the piston. Once you have enough clearance, use the Breggin tool with a 3/8 extension and ratchet to fully lower the piston.

15. Wipe the inner surface of the dust boot with brake fluid or caliper grease. Install the dust boot over the piston. Tap it down into the caliper to fully seat it. Note: I found the AMG procedure of installing the boot first, and then passing the piston through the boot and seating it onto the thrust screw to be too difficult. The AMG procedure commonly resulted in tearing the boot as it was written.

16. Install a new O-ring on the piston retaining screw. Install with a hex Allen socket. Install the new metallic cover plate onto the piston surface and tap into place with a plastic hammer.

17. Install the parking brake lever on the actuator shaft, Place the retainer on and secure with the bolt using Locktite.

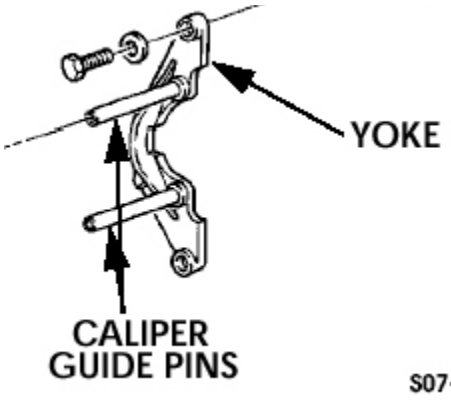
18. Install the parking brake spring.



19. Replace the bleeder valve using some anti-seize on the threads.

20. Slide out the yoke, polish the guide pins with 100 grit Emory clothe, then apply lubricant. If the Teflon sleeves in the caliper body or guide pins are significantly pitted, these along with the protective rubber boots can be replaced. http://www.bluehummer.com/brsepa.html

This kit is capable of repairing 2 calipers.



I have found that most of the caliper problems were the result of salt exposure and rusting. The areas most affected are the (1) actuator shafts rusting to the actuator shaft dust boot, (2) the bleeder valves rusting and freezing to the caliper body (3) the guide pins rusting and binding in the Teflon sleeves.

AMG does allow minor surface rust to be removed from these machine part surfaces using fine grit Emory cloth. However, deep pitting rust will probably destroy an internal component and require the entire caliper to be replaced. AMG does not recommend honing the cylinder.